

# The New Genus *Calyptranthera* (Asclepiadaceae) from Madagascar

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**ABSTRACT.** A species previously identified as *Toxocarpus caudiclavus* Choux (Asclepiadaceae, Secamoneae) is outside the morphologic and phylogenetic bounds of this genus. Instead, it is more closely related to the Malagasy endemic genus *Pervillea* Decaisne (Secamoneae), with which it shares some gynostegium characters. *Toxocarpus caudiclavus* differs from *Pervillea*, however, in several characters and is best placed in a new genus, *Calyptranthera*, which is herein described and illustrated.

During a survey of the tribe Secamoneae in Madagascar for the *Flore de Madagascar et des Comores*, I came across a taxon of *Toxocarpus*, *T. caudiclavus* Choux, that has been misplaced.

*Toxocarpus caudiclavus* was described by Choux (1914: 415), who with some hesitation placed the taxon in this genus. *Toxocarpus* Wight & Arnott is a primarily Asian genus, with a few species described from the African mainland and Madagascar. The type species, *T. kleinii* Wight & Arnott, which is distributed in India and Sri Lanka, is characterized by a two-parted dorsiventrally flattened corona lobe, a stigma head placed directly on the ovary with a thick lower part and a long thin upper part distinctly projecting above the staminal column. The likewise paleotropical *Secamone* R. Brown, the other large genus within the tribe Secamoneae, also described from Asia, differs primarily from *Toxocarpus* by having small flowers, laterally compressed corona lobes, and a short stigma head that does not project above the staminal column. Outside Asia, however, the distinction between these two genera is less marked, and several species of *Toxocarpus* might be better placed in *Secamone*, or both taxa may need to be divided into several smaller monophyletic genera (for discussion and references, see Klackenberg, 1992: 8). In Madagascar none of the diagnostic characters for the two genera holds true, and most Malagasy Secamoneae have hitherto been included in *Secamone* sensu lato. However, a handful of distinctly different Malagasy taxa with large flowers and dorsiventrally flattened corona lobes have been considered to be congeneric with the Asian *Toxocarpus*. Recent studies have shown that the Malagasy *Toxocarpus* is a para-

phyletic group composed of species better placed in at least three other genera, i.e., *Secamone* s.l. (Klackenberg, 1992: 20), *Pervillea* (Klackenberg, 1995 and in prep.) and *Calyptranthera* (see below).

*Toxocarpus caudiclavus* fits neither in *Toxocarpus* s. str. as it is circumscribed in Asia, nor in *Secamone* s.l. as it is known in Madagascar. It differs by its long projecting connectives and by having a discoid stigma head abruptly narrowed into a style and topped by a short broad upper part. This structure is found also in, e.g., Periplocaceae and the Malagasy endemic genus *Pervillea*, but not in *Secamone/Toxocarpus* (see above). Furthermore, in *T. caudiclavus* the four pollinia are adnate to a very thin U-like folded corpusculum without caudicle. These three characters, which distinguish *Toxocarpus caudiclavus* from *Toxocarpus/Secamone*, ally it, however, to *Pervillea*.

*Pervillea* was described by Decaisne (1844: 613) as a monotypic genus (*P. tomentosa*), but was later included in *Toxocarpus* by Jumelle and Perrier de la Bâthie (1907: 389, 1908: 214). However, it has recently been shown that due to several distinguishing characters, particularly the long projecting connectives, this taxon must be excluded from *Toxocarpus*, and *Pervillea* has been reinstated as a separate genus (Klackenberg, 1995). Furthermore, *Pervillea* is no longer monotypic but comprises, in addition to *P. tomentosa*, two more species: *P. decaryi* (Choux) Klackenberg (= *Toxocarpus decaryi* Choux) and *P. venenata* (Baillon) Klackenberg (= *Menabea venenata* Baillon) (Klackenberg 1995 and in prep.).

*Toxocarpus caudiclavus* differs from *Pervillea* and *Toxocarpus/Secamone* by the fused connectives forming a calyptra at the top of the gynostegium, the club-shaped appendages on long strings at the top of the prolonged connectives, the filaments with cuplike projections below the anther wings forming the pollinium entrance, the short recurved corona lobes, and the thin hairy submarginal fold at the corolla lobes. None of these features have been observed elsewhere in the tribe Secamoneae. *Toxocarpus caudiclavus* also lacks the unique feature of distinctly curled leaf hairs with much reduced or



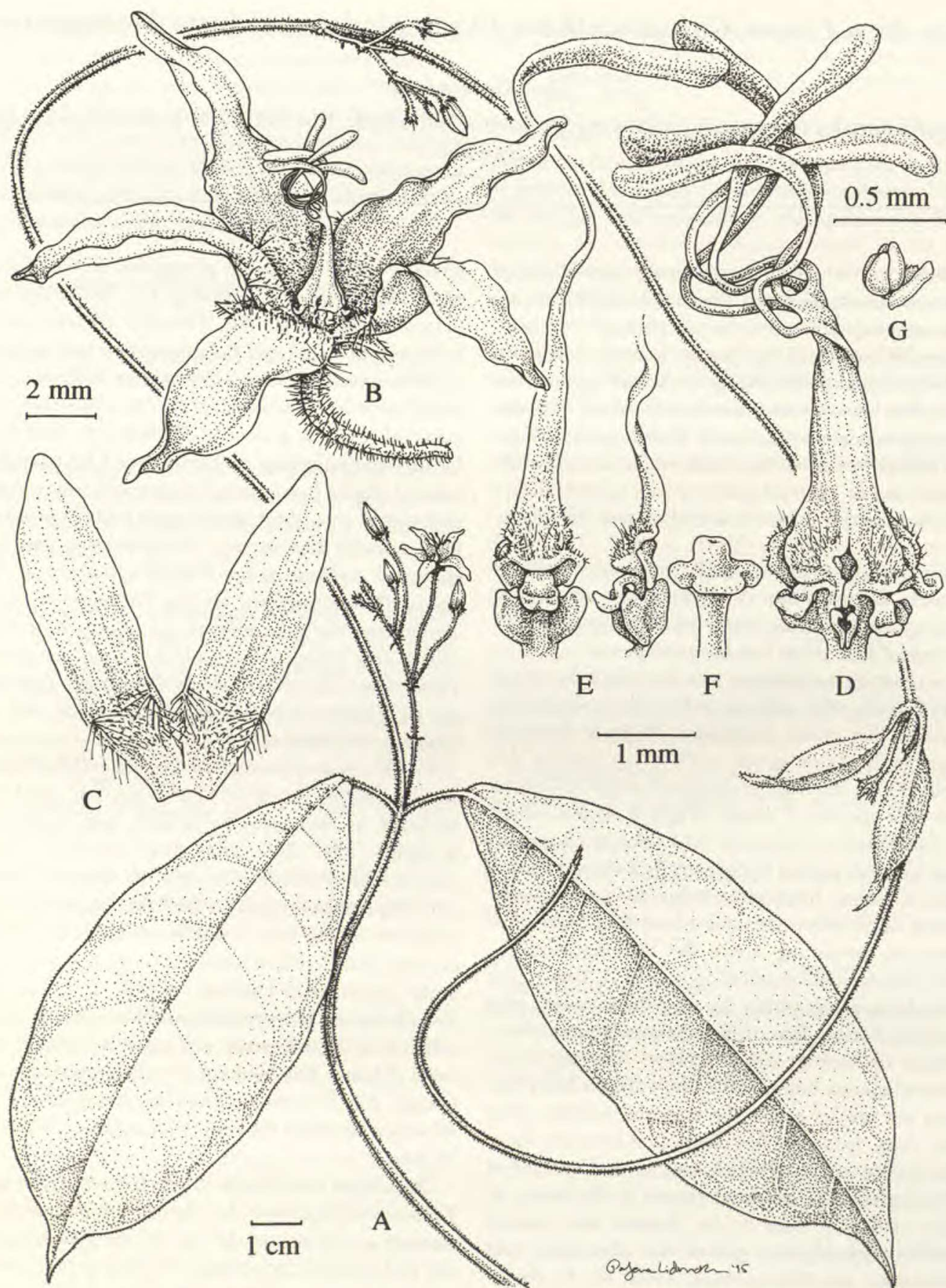


Figure 1. *Calyptranthera caudiclava* (Choux) Klackenberg. —A. Habit. —B. Flower. —C. Portion of corolla from within. —D. Gynostegium. —E. Anther seen from outside (left) and in lateral view (right). —F. Stigma head. —G. Pollinarium in lateral view. A–G, Perrier de la Bâthie 11747 (P).



absent lumen, which are characteristic of *Pervillea*. Consequently, *T. caudiclavus* must be excluded from *Toxocarpus* and does not fit in *Pervillea*. Including *T. caudiclavus* in *Pervillea* would make this genus unnecessarily heterogeneous. Furthermore, a phylogenetic analysis (Klackenberg, in prep.) clearly demonstrates that *T. caudiclavus* is not an apomorphic ingroup (as might be suspected because of the fused connectives), but is phylogenetically separate from *Pervillea*. A new genus, *Calyptranthera*, is thus proposed for this taxon. The name alludes to the unique calyptra above the gynostegium formed by the anthers.

***Calyptranthera*** Klackenberg, gen. nov. TYPE: *Toxocarpus caudiclavus* Choux = *Calyptranthera caudiclava* (Choux) Klackenberg.

Genus hoc *Pervilleae* connectiviis ultra loculos productis et structura pollinarii affinis vel differt connectiviis connatis et distincte appendiculatis, prominentiis cyathiformibus prope basin filamentorum, lobis coronae brevibus necnon recurvatis, et pilis non crispis. A *Toxocarpo* stigmathe brevi et lato cum parte inferiori angusta (stylus) insuper distinguenda.

***Calyptranthera caudiclava*** (Choux) Klackenberg, comb. nov. Basionym: *Toxocarpus caudiclavus* Choux, Ann. Inst. Bot.-Géol. Colon. Marseille, sér 3(2): 415. 1914. TYPE: Madagascar. Forêt orientale, Mt. Vatovavy, 300 m alt., 1911, *Perrier de la Bâthie* 11747 (lectotype, selected here, P). Figure 1.

Suffrutescent twiner; younger branches with rather stiff, erect reddish hairs. Leaf blades 10–14 × 4–5.5 cm, oblong to obovate, cuneate but minutely cordate at the very base, acuminate, with even or somewhat revolute margins, reddish erect hairs with lumen beneath, glabrescent above, with usually one colleter at the base above; venation pinnate and looped, reticulate; midrib, primary and secondary veins distinctly raised below when dry; petiole distinct, ca. 1 cm long, densely hairy when young, glabrescent. Inflorescences much shorter than the adjacent leaves; cyme lax, hairy, with only a few flowers developed at the same time; pedicels in pairs, up to 2 cm long; bracts 2–3 mm long. Calyx lobes ca. 2 × 0.9 mm, longer than the tube, ovate-triangular, acute, with long straight hairs outside, glabrous inside. Corollas contorted, with the

left lobe margins overlying, not twisted, the lobes fused at the base only into a short wide tube, greenish white with reddish spots; tube ca. 0.4 mm long, glabrous; lobes ca. 9 × 2.5 mm, oblong, acute but rounded at the very apex, inside glabrous below for ca. 1.5 mm then covered with rather long, ± erect white hairs for a zone of ca. 1.5 mm but glabrous above, with a few scattered longer reddish hairs outside. Staminal column in total ca. 8 mm high; filaments with projecting margins forming a cup (pollinia entrance) jutting out below the anther wings; anthers with connectives excluded ca. 1 mm long; connectives fused and projecting well above the thecae, forming a cone crowned with five elongated papillate clubs on free stalks, papillate and hairy below between the thecae. Corona lobes somewhat spatulate, truncate at the apex, bent downwards and outwards, much shorter than the connectives, glabrous. Pollinia ca. 0.2 mm long. Style abruptly broadened to a discoid stigma head ca. 1 mm broad with short upper part ca. 0.7 mm high. Fruits not seen.

*Calyptranthera caudiclava*, the only known species of this genus, is hitherto known only from Mt. Vatovavy on the east coast of Madagascar in rainforest at ca. 300 m altitude; flowering in October.

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